Optical Microscopy: Emerging Methods and Applications, edited by Brian Herman and John J. Lemasters, Academic Press; San Diego, 1993. xiv + 441 pages. £64.00, $79.95 ISBN 0-12-342060-1.

The range of light microscopy techniques available to biological researchers has expanded dramatically in the last decade with the development of precisely tailored optical systems combined with sensitive detectors and sophisticated computer analysis. In addition, an exponential increase in the number of probes for physiological parameters has re-juvenated live cell imaging. This book contains fifteen chapters by separate authors covering a number of these recent advances, packaged in a handy A5 size with four pages of colour plates. Its strength lies in the line up of contributors, who provide a series of well-written reviews following a logical format from dyes through imaging hardware to biological applications. Its weakness is the limited number of new technologies actually presented.

The introductory chapters on fluorescence and caged probes provide an excellent taste of the current technology and the potential arising from synthesis of novel reporters. Kao and Adams give a particularly comprehensive description of caging groups, probe synthesis, photo-chemistry, microscope hardware and biological applications. These two chapters also contain the only mention of application of these techniques to plants!

A strong (and almost inevitable) theme of calcium ratio imaging then develops, progressing through fundamental principles and equipment, to combined measurements of pH/pCa or ion-channel activity by patch-clamping. In a cover-to-cover read calcium fatigue sets in early and there is considerable overlap in discussion of the hardware requirements. As a positive benefit, this allows each chapter to stand alone, but in a relatively short book less duplication would have freed space for more diversity.

The 'second-half' adds variety, with short introductions to particle tracking, membrane lipid domains, confocal microscopy, fluorescent lifetime analysis and automated image analysis. Foskett provides a neat merger of DIC and fluorescence, though the inverted images take a while to adjust to! Tamm provides a thorough treatment of total internal reflectance fluorescence and McCusky places whole organs under microscopic scrutiny in situ.

If you are entering this area for the first time this book provides several good reviews and easy access to the literature until end-1991. Practitioners will find a number of technical tips and novel applications, but few real tantalising glimpses of the next five years. As the authors state, it is difficult to know what subjects to include and they have opted for areas that show the greatest potential to yield novel data about cellular physiology. As a consumer of such techniques, coverage of additional topics such as optical tweezers, UV-laser ablation, two-photon excitation. Raman imaging and luminescence would have extended the level of interest. Overall, the editors have provided a useful and informative text covering essentially well established technologies.

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Textbook of Biochemistry with Clinical Correlations, 3rd edition, edited by T.M. Devlin Wiley-Liss; New York, 1992. xxiii + 1185 pages. $55.95 ISBN 0-47-151348-2.

A book of this title presupposes that it will be of special relevance to those interested in the more medical aspects of biochemistry. Indeed the editor sets out in the preface that the purpose of the book is 'to relate the biochemical events at the cellular level to the physiological processes occurring in the whole animal; and to cite examples of deviant biochemical processes in human disease'. Such a book is much needed by students and teachers of this subject area. Although there are a number of excellent textbooks in which the scientific aspects are expertly presented with superb graphics, the more physiological aspect of mammalian biochemistry, upon which a study of pathology must be based, tend to be omitted. Moreover, such textbooks that once included nutritional and whole animal biochemistry have either removed those sections in more recent editions or are no more. How then does this book succeed in achieving its objectives that have been defined so clearly? The editor is supported by 26 authors who together write the 28 chapters that comprise the book. In addition there is in an appendix a Review of Organic Chemistry, which is a useful synopsis of the chemical basis of biochemical processes. Each chapter has a bibliography and the chapter ends with questions, fortunately with their answers. A unique feature is that from time-to-time panels at the side of the main text relate the biochemistry under discussion to a clinical context. This is an excellent feature.

This review concentrates on those parts of the book that would appeal especially to students of medicine and medically orientated subjects who would seek information of a similar nature. Taking chapter 14 (metabolic interrelationships) as an example we find a good account fo tissue–tissue interactions in different physiological states. However, this chapter would be better supported if some of the preceding chapters themselves adopted a more physiological approach. Perhaps a discussion of whole-body energy production in the chapter on bioenergetics and oxidative metabolism and a more physiological presentation of amino acid and purine and pyrimidine biochemistry would have been helpful in this context. The chapters on carbohydrate and fat metabolism do attempt to present the physiological implications of their subject areas and are the more successful fo so doing.

The final seven chapters contain a variety of topics that are of direct interest to the molecular physiologist. Thus the chapter entitled 'molecular cell biology' contains sections on nervous tissue; the eye; muscle contraction and blood coagulation. Although these chapters are well written and interesting in themselves the reader will also not find the topics well keyed into the earlier part of the book. For example, in the section on muscle contraction phosphocreatine is given scant regard, though its biosynthesis is mentioned in passing earlier in the book. The compound warrents a brief mention as creatine phosphate in the chapter on bioenergetics, but merits no mention in the index! Further chapters concern the biochemistry and physiology of

cytochrome P_{450}, a brief account of xenobiotic metabolism; iron, haem, gas transport and pH regulation, the latter with some unnecessary duplication with the opening chapter.

Digestion and absorption of basic nutrients is a valuable chapter, as it is difficult to find a biochemical treatment of the subject in any standard textbook. The two chapters devoted to the principles of nutrition (macro- and micro-nutrients) are interesting, but again relate poorly to other parts of the book. For example, there is no cross reference to the chapter on blood coagulation when vitamin K is discussed or of the importance of folate and B12 to purine and pyrimidine biosynthesis. Similarly, no mechanisms are given for the action of ascorbate in collagen biosynthesis and the opportunity of citing a mechanism for the function of Cu^{2+} in cross-linking reactions (mentioned earlier in the book) is lost. In this section a Clinical Correlation panel devoted to iron-deficient anaemia makes no connection with a similarly named panel four chapters later.

It is hard to avoid the conclusion that, irrespective of the quality of the individual chapters, the employment of such a large number of authors has resulted in a book in which the attention to detail is uneven and cross-referencing largely sporadic. The book contains many excellent chapters that are difficult to find in other standard works but, at a time when medical students in particular are being encouraged to hunt around libraries seeking their own information, this book would serve them rather poorly.

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